Please delete the paragraph starting on page 17, line 12, and replace it with the following paragraph

In this Example, the experimental parameters and conditions for the electro0phoresis separation and detection of the *Hae III* digest of Φ174 RF DNA fragments under non-denaturing conditions were as in Example 3. Results of the separation using the PMMA/PDMS microchannel structures are shown in Fig. 8. In this Example, separation of the eleven double stranded fragments was achieved in 5.0 minutes of total separation time.

In the Claims:

Please cancel claims 1-13 without prejudice and add claims 14-26 as follows:

14. (New) A method for manufacturing a microfluidic device having a first and a second plastic substrate with substantially planar apposed surfaces, comprising:

apposing a planar surface of the first plastic substrate to a planar surface of the second plastic substrate, wherein the planar surface of the first plastic substrate includes microstructures;

heating the planar surface of the first plastic substrate above its glass transition temperature;

heating the planar surface of the second plastic substrate above its glass transition temperature; and

interfacing the heated planar surface of the first plastic substrate with the heated planar surface of the second plastic substrate bonding the plastic substrates and forming a leak proof enclosure of the microstructures.

15. (New) The method for manufacturing a microfluidic device of claim 14, wherein interfacing includes holding the substrates together under positive pressure.

16. (New) A method for manufacturing a microfluidic device; comprising:

apposing a planar surface of a first plastic substrate to a planar surface of a second plastic substrate, wherein the first plastic substrate has a glass transition temperature Tg1, and wherein the second plastic substrate has a glass transition temperature Tg2;

heating the planar surface of the first plastic substrate to a temperature greater than Tg1

heating the planar surface of the second plastic substrate to a temperature greater than Tg2; and

bonding thermally the planar surface of the first plastic substrate to the planar surface of the second plastic substrate.

17. (New) The method of claim 16, wherein the planar surface of the first plastic substrate includes microstructures.

18. (New) The method of claim 17, wherein bonding includes enclosing the microstructures.

19. (New) The method of claim 17, wherein bonding includes forming a leak proof enclosure of the microstructures.

20. (New) The method of claim 16, bonding includes placing the planar surface of the first plastic substrate in contact with the planar surface of the second planar substrate under positive pressure.

21. (New) The method of claim 16,wherein the first plastic substrate and the second plastic substrate have a bulk phase temperature of T1 and T2 respectively, and wherein heating includes keeping T1 less than Tg1, and wherein heating includes keeping T2 less than Tg2.

22. (New) There method of claim 17, wherein microstructures includes microchannels having cross sectional dimensions between about 1 μm and 500 μm.

23. (New) A method for manufacturing a microfluidic device; comprising:

raising the local temperature of a planar surface of a first plastic substrate to a temperature in excess of the first plastic substrate's glass transition temperature, wherein the planar surface of the first plastic substrate includes microstructures;

raising the local temperature of a planar surface of a second plastic substrate to a temperature in excess of the second plastic substrate's glass transition temperature;

bonding the planar surface of the first plastic substrate to the planar surface of the second plastic substrate.

24. (New) The method of claim 23, wherein bonding includes forming a stable leak proof enclosure of the microstructure.

25. (New) The method of claim 24, wherein the microstructures include two or more microchannels that are fluidly connected.

26. A method for manufacturing a microfluidic device; comprising:

apposing a planar surface of a first plastic substrate to a planar surface of a second plastic substrate, the first plastic substrate having a glass transition temperature Tg1and a bulk phase temperature T1, the second plastic substrate having a glass transition temperature Tg2 and a bulk phase temperature T2, and wherein the planar surface of the first plastic substrate include microstructures, the microstructures having cross sectional dimensions between about 1 μm and 500 μm;

heating the planar surface of the first plastic substrate to a temperature greater than Tg1, wherein T1 remains less than Tg1;